

WHAT IS CLAIMED IS:

1. A compound comprising:
  - (a) one or more MHC class I  $\alpha 3$  complexes; and
  - (b) an antibody or a fragment thereof specific for a cell surface marker;wherein said MHC class I  $\alpha 3$  complexes comprise an isolated MHC class I  $\alpha 3$  domain or fragment thereof, a  $\beta_2$ -microglobulin molecule or fragment thereof, and an antigenic peptide; and  
wherein said MHC class I  $\alpha 3$  complexes are linked to said antibody or fragment thereof.
2. The compound of claim 1, wherein said antigenic peptide is linked to said  $\beta_2$ -microglobulin molecule or fragment thereof.
3. The compound of claim 2, wherein said antigenic peptide is covalently bound to said  $\beta_2$ -microglobulin molecule or fragment thereof.
4. The compound of claim 1, wherein said  $\beta_2$ -microglobulin molecule or fragment thereof has been modified to have enhanced affinity for the intact MHC class I  $\alpha$  chain relative to the isolated MHC class I  $\alpha 3$  domain or fragment thereof.
5. The compound of claim 4, wherein said  $\beta_2$ -microglobulin molecule or fragment thereof has a serine to valine mutation at amino acid 55 of the mature protein.
6. The compound of claim 1, wherein said cell surface marker is a cell surface marker of a professional antigen presenting cell.

7. The compound of claim 6, wherein said professional antigen presenting cell is a dendritic cell.

8. The compound of claim 7, wherein said cell surface marker is selected from the group consisting of CD83, CMRF-44, CMRF-56, BCDA-2, BCDA-3, BCDA-4, and DEC-205.

9. The compound of claim 1, wherein said cell surface marker is a cell surface marker of a tumor cell.

10. The compound of claim 1, wherein said cell surface marker is a cell surface marker of an epithelial cell.

11. The compound of claim 1, wherein said cell surface marker is a cell surface marker of a fibroblast.

12. The compound of claim 1, wherein said cell surface marker is a cell surface marker of a T cell.

13. The compound of claim 12, wherein said cell surface marker is selected from the group consisting of CD28, CTLA-4 and CD25.

14. The compound of claim 1, wherein said cell surface marker is a cell surface marker of an infected cell.

15. The compound of claim 1, wherein said antigenic peptide is derived from a cancer cell.

16. The compound of claim 1, wherein said antigenic peptide is derived from an infectious agent or from infected cells.

17. The compound of claim 1, wherein said antigenic peptide is derived from the target tissue of an autoimmune disease.

18. The compound of claim 9, wherein said antigenic peptide is derived from a cancer cell.

19. The compound of claim 1, wherein said isolated MHC class I  $\alpha 3$  domain or fragment thereof is linked to a carboxyl terminus of said antibody or fragment thereof.

20. A compound comprising:

- (a) one or more MHC class I  $\alpha 3$  complexes; and
- (b) an antibody or a fragment thereof specific for a cell

surface marker;

wherein said MHC class I  $\alpha 3$  complexes comprise one or more isolated MHC class I  $\alpha 3$  domains or fragments thereof, a  $\beta_2$ -microglobulin molecule or fragment thereof, and a costimulatory molecule; and

wherein said MHC class I  $\alpha 3$  complexes are linked to said antibody or fragment thereof.

21. The compound of claim 20, wherein said costimulatory molecule is linked to said  $\beta_2$ -microglobulin molecule or fragment thereof.

22. The compound of claim 21, wherein said costimulatory molecule is covalently bound to said  $\beta_2$ -microglobulin molecule or fragment thereof.

23. The compound of claim 20, wherein said  $\beta_2$ -microglobulin molecule or fragment thereof has been modified to have

enhanced affinity for the intact MHC class I  $\alpha$  chain relative to the isolated MHC class I  $\alpha$ 3 domain thereof.

24. The compound of claim 20, wherein said  $\beta$ <sub>2</sub>-microglobulin molecule or fragment thereof has a serine to valine mutation at amino acid 55 of the mature protein.

25. The compound of claim 20, wherein said cell surface marker is a cell surface marker of a professional antigen presenting cell.

26. The compound of claim 25, wherein said professional antigen presenting cell is a dendritic cell.

27. The compound of claim 26, wherein said cell surface marker is selected from the group consisting of CD83, CMRF-44, CMRF-56, BCDA-2, BCDA-3, BCDA-4, and DEC-205.

28. The compound of claim 20, wherein said cell surface marker is a cell surface marker of a tumor cell.

29. The compound of claim 20, wherein said cell surface marker is a cell surface marker of an epithelial cell.

30. The compound of claim 20, wherein said cell surface marker is a cell surface marker of a fibroblast.

31. The compound of claim 20, wherein said cell surface marker is a cell surface marker of a T cell.

32. The compound of claim 31, wherein said cell surface marker is selected from the group consisting of CD28, CTLA-4 and CD25.

33. The compound of claim 20, wherein said cell surface marker is a cell surface marker of an infected cell.

34. The compound of claim 20, wherein said costimulatory molecule is selected from the group consisting of B7.1 and B7.2.

35. The compound of claim 20, wherein said isolated MHC class I  $\alpha 3$  domain or fragment thereof is linked to the carboxyl terminus of said antibody or fragment thereof.

36. A compound comprising:

- (a) two or more MHC class I  $\alpha 3$  complexes;
- (b) a multivalent compound; and
- (c) an antibody or a fragment thereof specific for a cell

surface marker;

wherein said MHC class I  $\alpha 3$  complexes comprise one or more isolated MHC class I  $\alpha 3$  domains or fragment thereof, one or more  $\beta_2$ -microglobulins or fragment thereof, and one or more molecules selected from the group consisting of antigenic peptides, costimulatory molecules, and cytokines;

wherein said MHC class I  $\alpha 3$  complexes are linked to said multivalent compound; and wherein said multivalent compound is linked to said antibody.

37. The compound of claim 36, wherein said one or more molecules are linked to said  $\beta_2$ -microglobulin or fragment thereof.

38. The compound of claim 37, wherein said one or more molecules are covalently bound to said  $\beta_2$ -microglobulin or fragment thereof.

39. The compound of claim 36, wherein said  $\beta_2$ -microglobulin molecule or fragment thereof has been modified to have enhanced affinity for the intact MHC class I  $\alpha$  chain relative to the isolated MHC class I  $\alpha 3$  domain thereof.

40. The compound of claim 36, wherein said  $\beta_2$ -microglobulin or fragment thereof has a serine to valine mutation at amino acid 55 of the mature protein.

41. The compound of claim 36, wherein said cell surface marker is a cell surface marker of a professional antigen presenting cell.

42. The compound of claim 41, wherein said professional antigen presenting cell is a dendritic cell.

43. The compound of claim 42, wherein said cell surface marker is selected from the group consisting of CD83, CMRF-44, CMRF-56, BCDA-2, BCDA-3, BCDA-4, and DEC-205.

44. The compound of claim 36, wherein said cell surface marker is a cell surface marker of a tumor cell.

45. The compound of claim 36, wherein said cell surface marker is a cell surface marker of an epithelial cell.

46. The compound of claim 36, wherein said cell surface marker is a cell surface marker of a fibroblast.

47. The compound of claim 36, wherein said cell surface marker is a cell surface marker of a T cell.

48. The compound of claim 47, wherein said cell surface marker is selected from the group consisting of CD28, CTLA-4 and CD25.

49. The compound of claim 36, wherein said antigenic peptide is derived from a cancer cell.

50. The compound of claim 36, wherein said antigenic peptide is derived from an infectious agent or from infected cells.

51. The compound of claim 36, wherein said antigenic peptide is derived from the target tissue of an autoimmune disease.

52. The compound of claim 36, comprising one or more cytokines selected from the group consisting of B7.1 and B7.2.

53. The compound of claim 36, comprising one or more cytokines selected from the group consisting of: IL-1, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11, IL-12, IL-13, IL-14, IL-15, IL-16, IL-17, IL-18,  $\alpha$  interferons,  $\omega$  interferon,  $\beta$  interferons,  $\gamma$  interferons,  $\tau$  interferon, colony stimulating, granulocyte-macrophage colony stimulating factor, transforming growth factor, and insulin-like growth factors.

54. The compound of claim 36, wherein said multivalent compound is avidin.

55. The compound of claim 36, wherein said multivalent compound is selected from the group consisting of streptavidin and chicken avidin.

56. The compound of claim 36, wherein said multivalent compound is a modified GCN4-zipper motif.

57. A polynucleotide encoding a compound comprising:
- (a) one or more MHC class I  $\alpha$ 3 chains; and
  - (b) an antibody or fragment thereof specific for a cell surface marker;
- wherein said MHC class I  $\alpha$ 3 chains are linked to said antibody or fragment thereof.
58. A method of immunizing an animal, comprising administering to said animal the compound of claim 1.
59. A method of immunizing an animal, comprising administering to said animal the compound of claim 20.
60. A method of immunizing an animal, comprising administering to said animal the compound of claim 36.